

Notice of Allowability

Application No.

09/993,963

Applicant(s)

NISHIMURA ET AL.

Examiner

Karen B Addison

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1-38.
3. ☒ The drawings filed on 27 November 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____. |
| 5 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. <u>2</u> | 6 <input type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-38 are allowed.
2. The following is an examiner's statement of reasons for allowance: Prior art shows a composite vibrating device comprising: a vibrating member having acoustic reflector applied over a piezoelectric thin film material have alternating high and low acoustical impedance supported by a substrate.

However prior art fails to show: a composite vibration device having a first and second reflecting layers connected to respective sides of the vibrating member, each of the first and second reflecting layers being comprised of a material having a second acoustical impedance which is lower than the first acoustical impedance; and first and second supporting members, each of which is comprised of a material having a third acoustical impedance which is higher than the second acoustical impedance a, the first and second supporting members being connected to sides of the first and second reflecting layers opposing the sides of the reflecting layers connected to the vibrating member, respectively; wherein vibrations propagated from the vibrating member to the reflecting layers are reflected at the interfaces between the reflecting layers and the supporting members. Prior art also fails to show, a third reflective layer wherein the first supporting member, the first reflecting layer, the first vibrating member, the second reflecting layer, the second vibrating member, the third reflecting layer, and the second supporting member are connected in this order, and vibrations produced by the first and second vibrating members are reflected at the interface between the first reflecting layer and the

first supporting member, or at the interface between the third reflecting layer and the second supporting member, and at the interfaces between the second reflecting layer and the first or second vibrating member. Wherein, the symbol S_2 represents the area of a surface of the vibrating member connected to each of the first and second reflecting layers and the symbol S_1 represents the area of a surface of each of the first and second reflecting layers connected to the vibrating member, the area ratio S_2/S_1 is about 1 or less, and vibrations propagated from the vibrating member to each reflecting layer are reflected at the interfaces between the reflecting layers and the supporting members. Prior art also show a composite device having a third reflecting layer, a second vibrating member, a fourth reflecting layer, and a third supporting member, which are connected, in this order, to a side of at least one of the first and second supporting members opposing the side thereof connected to at least one of the first and second reflecting layers.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen B Addison whose telephone number is 703-306-5855. The examiner can normally be reached on 8:00 to 4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1317. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

KBA
9/12/03

Thomas M. Delughera
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